

**CLAIMS:**

1. An apparatus for applying pre-cut lengths of zipper transversely to a moving web of material at intervals spaced 5 in the direction of movement of the web, comprising:

means for advancing a web of material in a predetermined direction;

a turret having a surface containing a plurality of circumferentially-spaced axially-extending grooves for 10 receiving pre-cut lengths of zipper;

means for driving the turret to rotate about the axis of the cylinder;

the turret being positioned relative to the web so that its axis of rotation extends transversely to the direction of 15 advancement of the web and, upon rotation of the turret, the grooves in its surface are brought successively to a location in which pre-cut zipper lengths occupying the grooves are presented for attachment to the web;

means for feeding pre-cut lengths of zipper comprising 20 first and second interengageable profiles and a slider mounted thereon successively to the grooves of the turret at a loading location different from the attachment location;

means for causing removal of pre-cut zipper lengths from the grooves of the turret at the attachment location and for 25 attachment of the zipper lengths to the web; and

means for mounting sliders on the zipper so each length of zipper fed to the turret has a slider mounted thereon.

2. An apparatus according to claim 1, to which the 30 means for mounting the sliders on the zipper comprise a rotary zipper applicator.

3. An apparatus according to claim 2, in which a knife is located between the slider applicator and the feeding 35 location for cutting a continuous supply of zipper into the

pre-cut lengths.

4. An apparatus according to any preceding claim, in which each groove in the turret includes a wider portion for receiving the slider on each pre-cut zipper length.

5. An apparatus according to claim 4, in which each wider portion extends to slightly beyond the mid-point of its respective groove from an insertion end thereof.

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6. An apparatus according to any preceding claim, in which the means for removal and attachment of the zipper lengths comprises a heated sealing bar which is movable towards and away from the film and is located adjacent the attachment location at the opposite side of the film to the turret.

7. An apparatus according to any preceding claim, in which the slider-mounting means produces zipper having its profiles disengaged from each other and the apparatus includes, between the slider-mounting means and the turret, a device for engaging the zipper profiles with each other, the device comprising a pair of rollers through the nip of which the zipper passes and which are arranged to engage the profiles of the zipper with each other and to separate from each other to allow the sliders to pass therebetween.

8. An apparatus according to claim 7, in which the roller surfaces forming the nip are convex.

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9. An apparatus according to any preceding claim, including a form-fill-seal machine arranged to receive the web with zippers attached and to form the web into bags and to fill the bags with a product, the zipper lengths forming reclosable fasteners of the bags.

10. An apparatus according to any of claims 1 to 8, including a machine arranged to receive the web with zippers attached and to form the web into bags for subsequent filling with a product, the zipper lengths forming reclosable fasteners of the bags.

11. An apparatus according to any of claims 1 to 8, including a means for forming the web with zippers attached into a roll for subsequent use in making empty bags or in a 10 form-fill-seal machine.

12. A device for engaging the profiles of a slider zipper, the device a pair of rollers through the nip of which the zipper passes and which are arranged to engage the 15 profiles of the zipper with each other and to separate from each other to allow the sliders to pass therebetween.

13. A device according to claim 12, in which the roller surfaces forming the nip are convex.

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14. A method of applying pre-cut lengths of zipper transversely to a moving web of material at intervals spaced in the direction of movement of the web, comprising providing a web of material;

25 advancing the web in a predetermined direction past a rotary turret positioned to rotate about an axis transverse to the predetermined direction and having a surface containing a plurality of circumferentially-spaced axially-extending grooves for receiving pre-cut lengths of zipper;

30 the turret being positioned relative to the web so that, upon rotation, the zipper-receiving grooves thereof are brought successively to a zipper-application location in which zipper lengths occupying the grooves are presented for application to the web in directions extending transversely 35 thereof;

feeding pre-cut lengths of zipper to successive zipper-receiving grooves of the rotary turret at a location different from the zipper-application location, each zipper length comprising first and second interengageable profiles and a 5 slider mounted thereon;

rotating the turret to advance the zipper lengths successively from the receiving location to the application location; and

attaching the zipper length to the web at the zipper-10 application location.

15. A method according to claim 14, in which the zipper lengths are attached to the web by means of a heated sealing bar which is movable towards and away from the film and is 15 located adjacent the attachment location at the opposite side of the film to the turret.

16. A method according to claim 14 or 15, in which the sliders are mounted on the zipper lengths by means of a rotary 20 zipper applicator.

17. A method according to any of claims 14 to 16, in which the sliders are mounted on a continuous length of zipper which is subsequently cut into lengths.

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18. A method according to any of claims 14 to 17, in which the zipper profiles are disengaged during mounting of the sliders thereon and are re-engaged prior to feeding to the turret, re-engagement being by passing the zipper between the 30 nip of a pair of rollers which are arranged to separate from each other to allow the sliders to pass therebetween.

19. A method according to any of claims 14 to 18, including the further step of feeding the web with zippers 35 attached to a form-fill-seal machine arranged to receive the

web with zippers attached and to form the web into bags and to fill the bags with a product the zipper lengths forming reclosable fasteners of the bags.

5        20. A method according to any of claims 14 to 18, including the further step of feeding the web with zippers attached to a machine for forming the web into bags for subsequent fitting with a product, the zipper lengths forming reclosable fasteners of the bags.

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21. A method according to any of claims 14 to 18, including the further step of forming the web with zippers attached into a roll for subsequent use in making empty bags or in a form-fill-seal machine.

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22. An apparatus for applying pre-cut zipper lengths to a web, the apparatus being substantially as hereinbefore described with reference to the drawing.

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23. A method of applying pre-cut zippers lengths to a web, the method being substantially as hereinbefore described with reference to the drawing.